



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/635,971 Confirmation No.: 1239
Applicant: Watanabe *et al.*
Filed: August 6, 2003
Title: Processes for Preparing 1,3-Dioxolane Nucleosides

TC/AU.: 1644
Examiner: Unassigned

Docket No.: 08841.105052 (PHA 2030 US)
Customer No.: 20786
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT

Sir:

The citation of information on the attached Form PTO-1449 is made pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98. Copies of all references are enclosed. The citation of this information does not constitute an admission of priority or that any cited item is available as a reference, or a waiver of any right the applicant may have under applicable statutes, Rules of Practice in patent cases, or otherwise.

Because this Information Disclosure Statement is being submitted before the mailing of a first Office Action on the merits, the Applicants do not believe that any additional fees are due; however, the Commissioner is hereby authorized to charge any fees due or credit any overpayment to Deposit Account No. 11-0980.

Respectfully submitted,

Madeline I. Johnston, Esq.
Reg. No. 36,174

Date: February 23, 2004
King & Spalding, LLP
191 Peachtree Street, N.E., Atlanta, GA 30303
Office: (404)572-4600/ Fax: 404-572-5145

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on February 23, 2004

Tisha Hardrick

Please type a plus sign (+) inside this box →

FEB 27 2004

PTO/SB/08A (08-00)

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

RECEIVED
FEB 27 2004
U.S. PATENT AND TRADEMARK OFFICE

Complete if Known

Submitted for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Sheet

1

of

3

Application Number

10/635,971

Filing Date

August 6, 2003

First Named Inventor

Watanabe et al.

Group Art Unit

1644

Examiner

Unassigned

Attorney Docket Number

08841.105052 (PHA 2030)

3401675 1

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages/Relevant Figures Appear
		Number	Kind Code ² (if known)			
	AA	5,047,407		Belleau et al.	09-10-1991	
	AB	5,204,466	A	Liotta et al.	04-20-1993	
	AC	5,272,151	A	Marzi et al.	12-21-1993	
	AD	5,663,320	A	Mansour et al.	09-02-1997	
	AE	5,693,787	A	Mansour et al.	12-02-1997	
	AF	5,696,254	A	Mansour et al.	12-09-1997	
	AG	5,744,596	A	Mansour et al.	04-28-1998	
	AH	5,756,706	A	Mansour et al.	05-26-1998	
	AI	5,767,122	A	Chu et al.	06-16-1998	
	AJ	5,792,773	A	Chu et al.	08-11-1998	
	AK	5,852,027	A	Liotta et al.	12-22-1998	
	AL	5,922,867	A	Mansour et al.	07-13-1999	
	AM	6,215,004	B1	Painter et al.	04-10-2001	
	AN	6,358,963	B1	Nguyen-Ba	03-19-2002	

FOREIGN PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document DD-MM-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Office ³	Number	Kind Code ² (if known)				

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	AO	BAUER, M., et al., "Iodide catalysis of oxidations with dimethyl sulfoxide: a convenient two-step synthesis of α-diketones from α-methylene ketones," <i>J. Org. Chem.</i> , 40(13):1990-1992 (1975).	
	AP	BELLEAU, B., et al., "Design and activity of a novel class of nucleoside analogs effective against HIV-1," <i>5th Int. Conf. on AIDS</i> , Montreal, Canada; June 4-9, 1989; Abstr. No. T.C.O.1. and Poster No. 4576.	

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box → Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Submitted for form 1449/PTO				<i>Complete if Known</i>	
				Application Number	10/635,971
				Filing Date	August 6, 2003
				First Named Inventor	Watanabe <i>et al.</i>
				Group Art Unit	1644
				Examiner	Unassigned
Sheet	2	of	3	Attorney Docket Number	08841.105052 (PHA 2030)

3401675 1

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	BA	CHOI, W.-B., <i>et al.</i> , "In situ complexation directs the stereochemistry of N-glycosylation in the synthesis of oxathiolanyl and dioxolanyl nucleoside analogues," <i>J. Am. Chem. Soc.</i> , 113(24):9377-9379 (1991).	
	BB	CHOU, T.-S., <i>et al.</i> , "A cyclization approach toward five-membered heteroaromatic o-quinodimethanes via fused-3-sulfolenes," <i>J. Chinese Chem. Soc.</i> , 44:299-307 (1997).	
	BC	CORBET, A.H., <i>et al.</i> , "DAPD," <i>Curr. Opin. Investig. Drugs</i> , 2(9):348-353 (2001).	
	BD	EVANS, C.A. <i>et al.</i> , "Divergent asymmetric syntheses of dioxolane nucleoside analogues," <i>Tetrahedron: Asymmetry</i> , 4(11):2319-2322 (1993).	
	BE	GRESE, T. A., <i>et al.</i> , "General approach to halogenated tetrahydrofuran natural products from red algae of the genus <i>Laurencia</i> . Total synthesis of (±)-kumausallene and (±)-1- <i>epi</i> -kumausallene," <i>J. Org. Chem.</i> , 58(9):2468-2477 (1993).	
	BF	GU, Z., <i>et al.</i> , "Mechanism of action and in vitro activity of 1',3'-dioxolanylpurine nucleoside analogues against sensitive and drug-resistant human immunodeficiency virus type 1 variants," <i>Antimicrob. Agents Chemother.</i> , 43(10):2376-2382 (October 1999).	
	BG	GU, Z., <i>et al.</i> , "Anti-HIV-1 activities of 1,3-dioxolane guanine and 2,6-diaminopurine dioxolane," <i>Nucleosides Nucleotides</i> , 18(4&5):891-892 (1999).	
	BH	HAMBALEK, R., <i>et al.</i> , "A short synthesis of (±)-oxetanocin," <i>Tetrahedron Lett.</i> , 31(38):5445-5448 (1990).	
	BI	HANESSIAN, S., <i>et al.</i> , "Oxidation of alcohols with <i>N</i> -halosuccinimides -- new and efficient variants," <i>Synthesis</i> , 1981:394-396 (May 1981).	
	BJ	HANN, R.H., <i>et al.</i> , "The structures of the diacetone dulcitol," <i>J. Am. Chem. Soc.</i> , 61:2432-2442 (1939).	
	BK	HASKINS, W. T., <i>et al.</i> , "The isomeric 1,3- and 2,3-benzylidene-D-arabitol," <i>J. Am. Chem. Soc.</i> , 65(9):1663-1667 (September 7, 1943).	
	BL	HOPKINS, M. H., <i>et al.</i> , "Stereocontrolled preparation of tetrahydrofurans from acid-promoted rearrangements of allylic acetals," <i>J. Am. Chem. Soc.</i> , 113(14):5354-5365 (1991).	
	BM	KIM, H.-O., <i>et al.</i> , "L-β-(2S,4S)- and L-α-(2S,4R)-dioxolanyl nucleosides as potential anti-HIV agents: Asymmetric synthesis and structure-activity relationships," <i>J. Med. Chem.</i> , 36(5):519-528 (March 5, 1993).	
	BN	KORNBLUM, N., <i>et al.</i> , "A new and selective method of oxidation. The conversion of alkyl halides and alkyl tosylates to aldehydes," <i>J. Am. Chem. Soc.</i> , 81:4113-4114 (August 5, 1959).	
	BO	KRAUS, J.-L., <i>et al.</i> , "Synthesis of new 2,5-substituted 1,3-oxathiolanes. Intermediates in nucleoside chemistry," <i>Synthesis</i> , 1991:1046-1048 (November 1991).	

Examiner Signature		Date Considered
--------------------	--	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Please type a plus sign (+) inside this box →

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Submitted for form 1449/PTO				<i>Complete if Known</i>	
				Application Number	10/635,971
				Filing Date	August 6, 2003
				First Named Inventor	Watanabe <i>et al.</i>
				Group Art Unit	1644
				Examiner	Unassigned
Sheet	3	of	3	Attorney Docket Number	08841.105052 (PHA 2030)

3401675_1

OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ⁶
	CA	MARSHALL, J. A., <i>et al.</i> , "Stereoselective total synthesis of the pseudopterolide kallolide A," <i>J. Org. Chem.</i> , 63(17):5962-5970 (1998).	
	CB	MEWSHAW, J.P., <i>et al.</i> , "Dioxolane guanosine, the active form of the prodrug diaminopurine dioxolane, is a potent inhibitor of drug-resistant HIV-1 isolates from patients for whom standard nucleoside therapy fails," <i>J. Acquir. Immune Defic. Syndr.</i> , 29(1):11-20 (January 1, 2002).	
	CC	NORBECK, D. W. <i>et al.</i> , "A new 2',3'-dideoxynucleoside prototype with <i>in vitro</i> activity against HIV," <i>Tetrahedron Letters</i> , 30(46):6263--6266 (1989).	
	CD	OHLE, H., "Die Benzoylierung des Erythrins and Darstellung von Derivaten des O-Benzoyl-glykolaldehyds," <i>Chem. Ber.</i> , 74(2):291-294 (1941).	
	CE	SHIAO, M.-J., <i>et al.</i> , "A convenient synthesis of protected α-hydroxyacetaldehydes," <i>Synthetic Commun.</i> , 18(4):359-366 (1988).	
	CF	SHEIKH, M.Y., "The vapor phase oxidation of alcohols by cupric oxide. A convenient preparation of aldehydes and ketones," <i>Tetrahedron Lett.</i> , 1972(4):257-260 (1972).	

3401675_1

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.